

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Roger Proksch, et al. Art Unit : 2862  
Serial No.: 10/016,475 Examiner : Jay M. Patidar  
Filed : November 30, 2001  
Title : LINEAR VARIABLE DIFFERENTIAL TRANSFORMERS WITH  
IMPROVED MEASUREMENT CAPABILITIES (AS AMENDED)

**Mail Stop Appeal Brief - Patents**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

REPLY BRIEF

Pursuant to 37 C.F.R. § 41.41, Applicants herewith file this reply brief, directed only to new points of argument in the examiner's answer.

First, the rejection alleges that the admitted prior art discloses RMS noise representing less than 2.1 nm in figure 10.

In fact, figure 10 shows that the integrated RMS noise was 2.1 nm for the ferromagnetic core LVDT. The admitted prior art never disclosed RMS noise "representing less than 2.1 nm" (emphasis added).

Moreover, in this Examiner's Answer, for the first time, the rejection mixes between what is said by the prior art to Neff, and what is known in some hypothetical prior art which is apparently not relied on here. In fact, the evidence relied on in section 8 is only U.S. Patent Number 2,452,862 to Neff. Therefore, on page 4, where the rejection states that it is inherent that these forms are non-ferromagnetic, there is no

basis for this. In fact, Neff says nothing about the composition of his coil forms. That is of no great significance where the moving coil forms are mounted on an iron core such as in figures 1, 3, 4 and 5. In Neff's figure 2, the moving core with an air core does state if it is ferromagnetic or not. Neff had no concerns about ferromagnetism in the figure 1 embodiment.

One would conclude that Neff similarly had no concerns in the figure 2 embodiment. This kind of conclusion is buttressed by the fact that Neff really says nothing about an air core form. In fact, if it is inherent that forms could be non-ferromagnetic, why does the reply brief explicitly rely on only a single piece of prior art, and never cite a single piece of prior art or rely on a single piece of prior art that shows non-ferromagnetic coil forms?

On page 4, the reply brief states "The non-ferromagnetic forms don't interact with a magnetic field generated by coils. It is also very common in the magnetic field art to have a coil form made from non-ferromagnetic material e.g. plastic or ceramic bobbin. The non-ferromagnetic coil bobbins or coil forms are also used in inductive sensing art to isolate or insulate coil winding from the rest of the elements of the device (sic)". If this is based on personal knowledge of the Examiner, then a reference to support this has been requested

repeatedly throughout the prosecution and is repeated herein.

At the bottom of page 4, the reply brief alleges applicants' admission that non-ferromagnetic coil forms are known in the art. While this is true in the limited sense stated on page 5, it is not an admission that non-ferromagnetic coil forms are known in the art for every possible application that could ever possibly be conceived for them.

At the bottom of page 4, the rejection states that it would have been obvious to modify the pickup device of Neff to use non-ferromagnetic coil forms. The reason given: because the Examiner concludes that they are very well-known in the art. However, the use of such non-ferromagnetic coil forms has been described for use in a sensor for a very high magnetic field and other applications. Never is there an admission that non-ferromagnetic coil forms are usable for the features now claimed.

On page 5, the patent office admits that Neff does not disclose means for reducing noise. With all due respect, it is not quite clear which claim this is referring to. To the extent this is referring to Claim 62, it should be noted that the exact language of the claim is means for reducing Barkhausen noise, which is very different than simply means for reducing noise.

At the top of page 5, moreover, the Examiner basically says that

the admitted prior art teaches removing Barkhausen noise, and that "One simple means to reduce such noise is to use air core or non-ferromagnetic coil forms". In fact, that is the whole subject of the invention. The rejection makes exactly applicants' point. This is a simple means to reduce such noise. No one has suggested it prior to our invention.

The admitted prior art mentions the prior very specific use of an air core, but says that the excitation and signal conditioning electronics make possible significantly greater sensitivity than air core LVDT's. See page 13 of the specification. This is also disclosed on page 10 of the application and the text on page 13. The RMS noise is significantly lower with an air core than with a ferromagnetic core, .19 nm versus 2.1 nm.

In summary, the rejection, and the new points raised in the objection, attempt to use hindsight, and attempt to contend that applicant somehow admitted much more than applicant actually did admit. With all due respect, one of ordinary skill in the art would not find it obvious to remove Barkhausen noise in the way suggested by the present application.

In summary, nowhere does any of the prior art teach or suggest the use of an air core to remove Barkhausen noise. Admittedly, there is prior art including admitted prior art,

showing air cores have been used for various purposes. The question is what would a person of ordinary skill in the art using commonsense think. Would they think that an air core could be used to remove Barkhausen noise? Certainly not from anything in the prior art or admitted prior art, no matter how combined.

With all due respect, therefore, it is respectfully suggested that the rejection is in error, and should be reversed.

For these reasons, and the reasons stated in the Appeal Brief, Applicants submit that the final rejection should be reversed.

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Respectfully submitted,

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